Correction of equine dystocia

G. S. Frazer, N. R. Perkins* and R. M. Emberton†

Department of Veterinary Clinical Sciences, College of Veterinary Medicine, The Ohio State University, Columbus, Ohio 43210; *Department of Clinical Sciences, School of Veterinary Medicine, Massey University, Palmerston North, New Zealand and †Rood and Riddle Equine Hospital, Lexington, Kentucky, USA.

Introduction

Although most dystocias can be resolved at the farm fairly quickly by brief manipulation and assisted vaginal delivery, the practitioner should consider the alternatives if resolution is likely to take more than 10–15 min. Decisions should be based on:

- viability of the foal
- clinician's obstetrical skills
- availability of equipment and facilities
- financial constraints imposed by the owner.

Copious amounts of lubricant are essential to the successful resolution of a dystocia. This ensures that the soft tissues of the genital tract of the dam are not traumatised, and provides protection to the hands and arms of the clinician. Lubricants include methyl cellulose, polyethylene polymer, white petrolatum combined with 10% boric acid, and mineral oil.

Water soluble lubricants are generally not as desirable since they rapidly lose their lubricating abilities in the presence of fluids. The authors prefer to mix a polyethylene polymer powder with water. A clean stomach tube and pump are used gently to instill the lubricant into the uterine lumen (Fig 1). This is repeated as often as is necessary during the procedure to keep the fetus and reproductive tract coated. If the uterus is contracted, lubricant will tend to induce some uterine relaxation and create some additional space in which to perform manipulations (Perkins and Frazer 1994).

Mutation is defined as those manipulations by which a fetus is returned to a normal presentation, position and posture (Roberts 1986). Thus, mutation may entail a combination of fetal repulsion and rotation, together with adjustment or extension of the fetal extremities. The clinician should remain cognisant at all times that overzealous obstetrical manipulations are a major cause of uterine rupture. Repulsion of the fetus from the maternal pelvis is contraindicated if the uterus is contracted down around the fetus such that most of the fetal fluid has been expelled. Some of these cases may be amenable to correction by fetotomy if the clinician has the appropriate skills and equipment (Frazer 1997). The alternative is caesarean section.

Fig 1: A clean bucket, stomach tube and pump are an important part of the obstetrical kit. Lubricant is pumped in around the fetus as often as is necessary. Warm fluids tend to cause some uterine relaxation and the volume expansion creates additional space in which to perform manipulations.

Fig 2: Incomplete elbow extension can hinder delivery of the fetus. In these cases the foal’s muzzle will be close to the fetlocks rather than positioned over the carpi.
Fig 3: Unilateral hip flexion ('hurdling' posture). The fetal hoof of a hindlimb can become caught on the pelvic brim. This unilateral posture is more common than the bilateral condition ('dog sitting' posture). The uterus can easily be lacerated during attempts to correct this malposture, especially if the fetus is dead.

Fig 4: Foot-nape posture. If not corrected the displaced fetal hoof can be forced through the roof of the vagina, thereby creating a rectovaginal fistula. Continued straining can then push the limb out through the anal sphincter. The result would be a third degree perineal laceration.

Fig 5: Carpal flexion. Application of an obstetrical chain or rope to the distal limb can assist in correction of this malposture. The carpus is rotated laterally as the flexed fetlock is brought medially and caudally. As the limb is straightened the clinician's hand should cover the fetal hoof to protect the reproductive tract.

Fig 6: Contracted tendons. Flexural deformities are the most common congenital anomaly of foals. Limb contractures are generally bilateral. Severely affected limbs cannot be straightened.

Fig 7a: Lateral displacement of the head and neck. This is the single most common abnormality in referral hospital dystocia populations. The long fetal neck make this malposture very difficult to correct.

Fig 7b: If the head can be reached, placement of a rope snare permits traction to be applied to the head while the fetal body and neck are repulsed back into the uterus.
Traction must be applied with careful regard for maternal and fetal well being. Often traction applied entirely by hand is all that is necessary. Obstetrical straps or chains may provide a better grip. The authors prefer to apply one loop above the fetlock, with a second loop encircling the pastern. In assisted vaginal deliveries traction should be applied as an adjunct when the mare is exerting expulsive force, and should be released when the dam stops straining, thereby permitting rest and recovery. This approach is critical to permit adequate dilation of the caudal reproductive tract.

Copious lubrication and slow traction with continuous monitoring of cervical dilation are especially important when a controlled vaginal delivery is performed on an anaesthetised mare (Embertson 1992). Excessive use of force may be associated with fetal fractures (ribs, vertebrae and limbs) and maternal soft tissue trauma. A maximum of 2 or 3 people should be used to apply traction to the fetus.

Anterior presentation

Traction without delivery

Once an anteriorly presented fetus has been manipulated into a dorso-sacral position with head and forelimbs extended, minimal traction should be necessary to complete the delivery. If progress is not being made despite the application of copious amounts of lubricant, all traction should stop and the vaginal canal must be fully explored. There are 3 likely possibilities:-

Incomplete elbow extension

This abnormality should be suspected if the fetal hooves lie at the same level as the muzzle (Fig 2). The increased depth and width of the fetus within the maternal pelvic inlet prevents normal delivery. The fetal trunk should be repelled and the forelimbs extended to raise the elbows up over the floor of the pelvic inlet (Perkins and Frazer 1994). By ensuring that slightly more traction is applied to one limb than the other, the width of the fetus across the shoulders is reduced.

Dog sitting/hurdling posture

The fetus should be repelled sufficiently to permit an arm to sweep the floor of the pelvic inlet. If either unilateral (hurdling posture) or bilateral (dog sitting posture) hip flexion is present the fetal hoof will be caught on the brim of the pelvis (Fig 3). The unilateral posture is more common. In extreme cases the hindlimb may actually extend under the fetus and up into the vagina (Frazer et al. 1997). Although the hindlimb may be successfully repelled if the fetus is alive, it is a difficult procedure and is associated with some risk of uterine laceration. Repulsion should not be attempted on a standing mare if the fetus is dead.

In these cases, the hindlimb may not always return to its normal position and uterine rupture can result when the fetus is being extracted. Therefore, general anaesthesia and hoisting of the hindquarters is recommended (Baldwin et al. 1991). In experienced hands partial fetotomy is a viable alternative to caesarean section (Frazer 1997).

Fetal oversize

Unlike the cow, absolute or relative fetopelvic disproportion is uncommon in the mare, being responsible for less than 2% of dystocias in one referral hospital case study (Frazer et al. 1997). If copious lubrication and gentle traction are unsuccessful, a caesarean section or partial fetotomy are the only alternatives.

Foot nape posture

In these cases one or both of the fetal forelimbs is displaced over the head and pushed against the roof of the vagina (Fig 4). If not corrected immediately, the mare's straining can cause the fetal hoof to lacerate the vaginal roof and, in extreme cases, result in either a rectovaginal fistula or a third degree perineal laceration. A fistula occurs when the fetus withdraws its hoof from the rectum prior to delivery. In a third degree perineal laceration the strong expulsive efforts of the mare cause the limb that has penetrated the rectum to tear through the caudal rectovaginal shelf and rupture through the anal sphincter, thereby creating a cloaca. To correct this malposition the fetus must be repelled into the uterus. The forelimbs are then placed under the head and extraction can proceed.

Carpal flexion posture

Carpal flexion may be uni- or bilateral and, typically, the affected carpus is located at the pelvic inlet. The fetal body must first be repelled into the uterus. The flexed limb is grasped at the level of the fetlock and pastern. The carpus is rotated laterally and the fetlock is held flexed as the distal limb is brought medially and caudally to extend the limb out through the birth canal. This manoeuvre allows maximal use of available space by obliquing the extremity through the pelvic inlet. As the limb is straightened the clinician's hand is cupped over the bottom of the fetal hoof to prevent injury to the reproductive tract. Application of an obstetrical chain or rope to the distal limb can be useful in some cases (Fig 5).

Practitioners should be aware that flexural deformities are considered to be the most common congenital anomaly of foals and that a rigid deformity often means that a caesarean section or fetotomy must be performed (Giles et al. 1993; Hong et al. 1993). Limb contractures are generally bilateral, and more common in the forelimbs than in the hindlimbs. Severely affected
limbs cannot be straightened, and needless trauma can be inflicted on the genital tract by unrewarding attempts to correct the malposture (Fig 6).

**Head and neck flexion**

The single most common abnormality in referral hospital dystocia populations is a reflected head and neck (Vandeplassche 1993; Frazer et al. 1997). The head and neck may be displaced laterally along the fetal thorax (Fig 7a). These are very difficult to correct because of the length of the foal's neck and head. Inexperienced clinicians should consider referral as soon as the condition is diagnosed. If the fetus is alive, an attempt can be made to repulse the fetus and bring the head and neck into a normal posture for delivery. Placement of eye hooks or a head snare allow traction on the head while the fetal body and neck are repulsed back into the uterine body (Fig 7b). Whenever possible, the authors prefer to use a snare. Factors influencing the successful outcome include uterine tone, clinician arm length and skill, and the presence or absence of torticollis and facial scoliosis.

As with contracted tendons, it is essential that the practitioner considers the possibility of a 'wry neck' (Fig 8). This condition is not amenable to correction by mutation and needless trauma can be inflicted on the genital tract. Ventral deviation of the head is relatively easy to correct if the fetal nose is just below the brim of the pelvis (poll posture). In more severe cases the neck is tucked down between the forelimbs and the head is often unable to be reached (nape posture). If attempts to reposition the head and neck are unsuccessful, then caesarean section or fetotomy are indicated.

**Shoulder flexion**

This condition may be unilateral ('Swimming' posture) or bilateral ('Diving' posture) (Figs 9a and b). The fetal head can make access to the retained forelimb impossible and caesarean section may be indicated if a live foal is present. If the limb can be reached, correction of this malposture is performed in 2 stages. Initially the shoulder flexion is converted to a carpal flexion by grasping the limb in the area of the distal radius and bringing it caudally and medially as the fetal body is repelled. The carpus is then hooked over the brim of the pelvis to create a carpal flexion which is then corrected as above. If the fetus is dead, a fetotomy cut to remove the head and neck may provide sufficient room to correct the malposture.

**Posterior presentation**

The likelihood of a live foal being delivered in posterior presentation is low because pressure on, or premature rupture of, the umbilical cord leads to rapid asphyxiation. Although only about 1% of foals are presented posteriorly, this malpresentation accounts for 14–16% of referral hospital dystocia cases (Vandeplasseche 1993; Frazer et al. 1997). Approximately half of the fetuses may be malpositioned as well (Frazer et al. 1997). This type of dystocia is extremely difficult to correct under field conditions.

**Hock flexion**

This malposture accounts for about one quarter of referred posterior cases (Fig 10). Typically, both hindlimbs are involved (Vandeplasseche 1993; Frazer et al. 1997). Correction of a hock flexion is dangerous because of the risk of perforation of the dorsal aspect of the uterus. If attempted, a similar technique to that described for correction of a flexed carpus is employed. Caesarean section may be preferable for delivery of a live fetus, and fetotomy may be safer if the fetus is dead.

**Bilateral hip flexion**

Approximately half of referred posterior cases are in breech presentation (Fig 11). The comments for managing a hock flexion apply, because if mutation is attempted, the hip flexion must be first converted into a flexed hock posture.

**Transverse presentation**

Although transverse presentations are rare, they may account for up to 10–16% of referral hospital dystocia cases. The majority of transverse presentations are ventral transverse (Vandeplasseche 1993; Frazer et al. 1997) with the abdomen and limbs of the fetus presented towards the birth canal (Fig 12). The condition must be differentiated from twins, but the widespread adoption of ultrasonography has markedly reduced the likelihood of a twin birth.

Some cases of ventral transverse presentation may be delivered by repositioning of the fetus. It is often easier to extend the 2 hindlimbs and convert the fetus into a posterior presentation for vaginal delivery than to attempt to convert it into an anterior presentation. Dorsal transverse presentations with the spinal column of the fetus presented towards the birth canal are very rare. If the fetus is alive the delivery method of choice is caesarean section. An experienced obstetrician may be able to deliver a dead fetus by fetotomy (Frazer 1997).

**Hydrocephalus**

Hydrocephalus occurs when increased intracranial pressure causes the bones of the skull to enlarge, sometimes almost doubling the size of the head (Fig 13). The condition is common in equine fetuses, especially in pony breeds (Vandeplasseche 1993). Many affected foals can be delivered after incising the soft portion of the skull with a finger knife, allowing the skull to collapse.
Equine dystocia

Fig 8: 'Wry neck'. This condition is not amenable to correction by mutation as the neck cannot be straightened.

Fig 11: Bilateral hip flexion ('Breech' posture). In referral hospital populations approximately 50% of posteriorly presented fetuses have bilateral hip flexion. These are extremely difficult to correct. If mutation is attempted, the limbs must first be brought into a hock flexion posture.

Fig 9a: Unilateral shoulder flexion ('Swimming' posture). The fetal head can make access to the retained limb impossible. If the limb can be reached the malposture must be first converted into a carpal flexion. 9b: Bilateral shoulder flexion ('Diving' posture). The fetus is presented head first, with both forelimbs retained within the uterus.

Fig 12: Transverse presentation. The majority of transverse presentations are ventral, with the fetal limbs being palpable in the birth canal. Occasionally a fetus can be converted into a posterior presentation and delivered per vaginum. In dorso-transverse presentations the fetal spine is palpable. Fortunately these cases are extremely rare.

Fig 10: Hock flexion. In this type of posterior presentation it is usual for both hocks to be flexed and caught at the pelvic brim. Correction is very difficult and there is a high risk for uterine rupture.
Fig 13: Hydrocephalus. Increased intracranial pressure causes the bones of the skull to enlarge, sometimes almost doubling the size of the head. Often the soft skull can be collapsed with a finger knife. The trunk of affected fetuses is typically smaller than normal, and therefore readily delivered. The condition is especially common in ponies.

The trunk of the hydrocephalic fetus is generally smaller than normal and seldom interferes with delivery. If the enlarged cranium is bony then a fetotomy cut may be necessary to reduce the size of the head.

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Photographs courtesy of G. Frazer.

References


